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PATENT ABSTRACTS OF JAPAN

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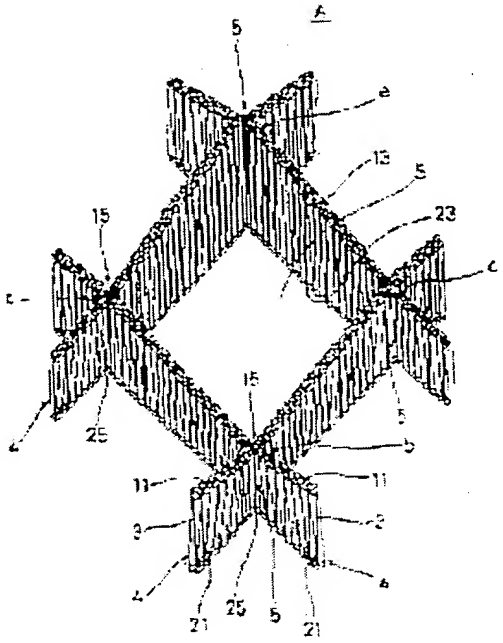
(54) THREE-DIMENSIONAL STRUCTURE NET

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a three-dimensional structure net partially increased in pressure resistance and rigidity and capable of being suitably used for mats for cares and health by changing the net-knitting direction heights of three- dimensional string parts forming the meshes of the net to form the uneven surface of the net.
SOLUTION: This three-dimensional structure net comprises front and back surface raw fabrics each having a net-like shape and formed by a warp-knitting method, and connection yarns 3 for connecting both the surface raw fabrics at a prescribed space. String parts 4 forming the mesh spaces S of the net are formed in a three-dimensional shape, and the three-dimensional string parts 4 are knitted with two or more kinds of yarns having differences between their thermal shrinkage rates as the connection yarns 3. Highly shrinkable yarns are shrunk to change the heights in the net thickness direction, thus forming the uneven surfaces of the net.



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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] It is the spacial-configuration-like network characterized by for the string section which is formed of **** organization, consists of a connecting fibre which consists a necessary gap and connects a base and both | these] bases of the front reverse side which makes the shape of a network, and forms network eye space to be the spacial-configuration-like network which makes the shape of a solid, for the difference of elevation to be attached with the connecting fibre with which the base of the front reverse side was built over the solid-like string section, and for a network front face to make the shape of irregularity.
[Claim 2] A spacial configuration-like network according to claim 1 characterized by being composed as a connecting fibre which connects a base of the front reverse side using two or more sorts of thread which has a difference in heat shrink nature, for high shrinkage-characteristics thread building, and height of solid-like **** being low in a portion.
[Claim 3] While each ****** which forms a mesh in a base of the front reverse side is constituted by stitch train of 1 which follows a sewing direction, or two or more wales, the solid-like string section It is built over a connecting fibre between ****** to which the front reverse side corresponds, respectively, and the shape of a solid by being tubercular with ****** by which ****** of the front reverse side of nothing and this solid-like **** adjoins both sides for every necessary gap of a sewing direction, respectively A spacial configuration-like network according to claim 1 or 2 characterized by for these **** making the shape of zigzag, being tubercular, forming polygonal network eye space, and distinguishing between height of solid-like **** and its pars tuberalis.
[Claim 4] A spacial configuration-like network according to claim 3 characterized by being tubercular with ****** which ****** of a base of the front reverse side can shift a location mutually, and adjoins on the table reverse side, respectively, and ****** of this front reverse side being built over a connecting fibre, and inclining right and left by turns.
[Claim 5] A spacial configuration-like network given in any 1 term of claims 1-4 to which it comes to prepare ****** which does not have a connecting fibre so that a mesh smaller than solid-like **** which contains a connecting fibre which forms network eye space at least in one side of a base of the front reverse side may be formed.
[Claim 6] A spacial configuration-like network given in any 1 term of claims 1-5 which a connecting fibre between bases of the front reverse side shifts to at least one or more wale right and left, and it is aslant built over it in a part of arbitration of a sewing direction in solid-like **** from a wale which faces on the front reverse side, and are characterized by this slanting thing that it builds and a portion crosses in the shape of abbreviation X.
[Claim 7] A spacial configuration-like network given in any 1 term of claims 1-6 which it comes to set as a part of arbitration where a flat-ground portion which composed a base of the front reverse side of the Taira ground weave contains both handle parts.
[Claim 8] By **** organization, it considers as a flat ground which formed a base of front reverse side one side with chain-stitch thread and insertion thread. It is the spacial configuration-like network in which the string section of the shape of a solid which builds over a connecting fibre ****** which forms a base of the other side as reticulated and forms a mesh in this reticulated base, and an other side base, and forms network eye space to an one side side was formed. The solid-like string section is a spacial configuration-like network characterized by attaching the difference of elevation with a connecting fibre over which a base of the front reverse side was built, and a network front face making the shape of irregularity.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] This invention relates to a spacial configuration-like network, especially the spacial configuration-like network with which a network front face can use the shape of irregularity suitable for a cushioning material, the spacer for garments, health, and the medical-application network and others for the core material of nothing, a cushion, or a mat, a carpet, a hot carpet, or ******.
[0002]
[Description of the Prior Art] conventionally, as the network by the organization edited by ** use as a permeability spacer for garments (for example, shoulder pad) etc., or mesh-like knitting fabric, the network with which at least one side connected the base of the front reverse side of make the shape of a network, with the connecting fibre, made the spacial configuration the string section which form network eye space, and made high thickness and the rate of opening possession be know so that JP,2-74647,U may see.
[0003] Moreover, also in this invention person, while a front reverse side base and a connecting fibre build over the string section of the shape of a solid which forms network eye space, constituting it in two or more trains including a portion using the organization technology using insertion thread as a spacial configuration-like network by the organization edited by ** and raising compressibility-proof, it has proposed making the **** itself hold aeration and water permeability (JP,5-187011,A).
[0004] Such a network of a spacial configuration is used for other various uses as a medical-application network as the core material and medium material of a mat besides a spacer, or a cushioning material.
[0005] however, the string section in which this conventional kind of spacial configuration network forms network eye space -- the whole region -- crossing -- abbreviation -- the same height -- it is -- the thickness direction size of a network -- abbreviation -- it is uniform.
[0006] Since a comparatively big load is received especially as a core material of a mat or a cushioning material, network eye space is not formed comparatively small, the solid network structure where it is near in the shape of a sheet is not made as the whole network, and, usually it hardly has irregularity in the table rear face so that pressure resistance and elasticity can be held.
[0007] a spacial configuration | make a network front face into the shape of irregularity as distinguish between the thickness direction size of the height of solid / which form / in / make this invention in view of the above, and / a spacial configuration-like network / network eye space /-like ****, i.e., a network, and a pressure resistance and rigidity become high selectively, be field contact, and serve as point or wave-like contact, and it enabled it to use suitable for a healthy mat, a spacer, and others]-like network offer.
[0008]
[Means for Solving the Problem and its Function] This invention is a spacial configuration-like network which solves the above-mentioned technical problem. Invention of claim 1 It is formed of **** organization and consists of a connecting fibre which consists a necessary gap and connects a base and both | these] bases of the front reverse side which makes the shape of a network. The string section which forms network eye space is the spacial configuration-like network which makes the shape of a solid, and the solid-like string section is characterized by attaching the difference of elevation with a connecting fibre over which a base of the front reverse side was built, and a network front face making the shape of irregularity.
[0009] Thus, when a network front face makes the shape of irregularity, and contact pressure of the network thickness direction differs, for example, it is used for a mat etc. by part for a part for the heights, and a crevice, the finger pressure effect can be expected.
[0010] Moreover, invention of claim 2 is characterized by being composed as a connecting fibre which connects a base of the front reverse side using two or more sorts of thread which has a difference in heat shrink nature, for high shrinkage-characteristics thread building, and height of solid-like **** being low in a portion in the aforementioned spacial configuration-like network.
[0011] In this case, as a result of some high shrinkage-characteristics thread of a connecting fibre contracting with the heat set after organization, this high shrinkage-characteristics thread builds, ****** of the front reverse side is mutually pulled in a portion, height of the solid-like string section becomes low, and a network front face by solid-like **** presents the shape of the shape of irregularity, and a wave as a whole. And it is closed by stitch organization by contraction of a connecting fibre, structure is stabilized, and endurance will also become good.
[0012] While each ****** in which the solid-like string section forms a mesh in a base of the front reverse side is constituted by stitch train of 1 which follows a sewing direction, or two or more wales in the aforementioned spacial configuration-like network, invention of claim 3 It is built over a connecting fibre between ****** to which the front reverse side corresponds, respectively, and the shape of a solid by being tubercular with ****** by which ****** of the front reverse side of nothing and this solid-like **** adjoins both sides for every necessary gap of a sewing direction, respectively Solid-like **** make the shape of zigzag, they are tubercular, polygonal network eye space is formed, and it is characterized by distinguishing between height of solid-like **** and its pars tuberalis.
[0013] Since according to this spacial configuration-like network it can compose easily by organization edited by ** and moreover distinguishes between a pars tuberalis of solid-like **** by using for that connecting fibre two sorts of thread which has a difference at heat shrink nature, a concavo-convex gestalt of a front face by it appears notably, a difference of the aforementioned contact pressure becomes large, and the aforementioned finger pressure effect etc. is demonstrated good.
[0014] Moreover, invention of claim 4 is characterized by being tubercular with ****** which ****** of a base of the front reverse side can shift a location mutually, and adjoins on the table reverse side, respectively, and ****** of this front reverse side being built over a

connecting fibre. and inclining right and left by turns in the aforementioned spacial configuration-like network.
[0015] In this case. a connecting fibre builds in each ****, a portion inclines right and left by turns. it becomes that by which the **** of the shape of nothing, therefore a solid itself fell, ****** was mutually regulated. and structure was stabilized. and the compressibility-proof of the whole network will increase trussed structure.
[0016] At least in one side of a base of the front reverse side in the aforementioned spacial configuration-like network. invention of claim 5 is characterized by coming to prepare ****** which does not have a connecting fibre so that a mesh smaller than the string section of the shape of a solid containing a connecting fibre which forms network eye space may be formed.
[0017] According to this spacial configuration-like network, by ****** which does not have table Ura one [at least] connecting fibre Knee deformation of solid-like **** which forms a crevice by itself and forms network eye space etc. is controllable, and even if nothing and a network front face present the shape of the shape of irregularity, and a wave good, a ** form of the solid condition and network eye space To a load and a pressure of the thickness direction, it is strong. and excels in compressibility-proof, and good elastic force can be possessed.
[0018] In a spacial configuration-like network of said invention of each. in a part of arbitration of a sewing direction in solid-like ****, a connecting fibre between bases of the front reverse side shifts to at least one or more wale right and left, it is aslant built over it from a wale which faces on the front reverse side, and invention of claim 6 is characterized by this slanting thing that it builds and a portion crosses in the shape of abbreviation X.
[0019] in this case, a connecting fibre in a part of arbitration is slanting -- building -- a portion -- too much aperture and knee of the solid-like string section -- falling -- etc. -- it is regulated, the firmness of solid-like **** will become still better, the whole network is covered. and abbreviation homogeneity and good compressibility-proof can be held. Moreover. for this reason. it is large in thickness of a network. without reducing firmness and compressibility-proof, and it becomes possible to enlarge high lowness for a part for heights. and a crevice.
[0020] It is characterized by coming to set invention of claim 7 as a part of arbitration where a flat-ground portion which composed a base of the front reverse side of the Taira ground weave contains both handle parts in a spacial configuration-like network of said invention of each.
[0021] In case heat set processing is performed after organization in this case, when a pincette can be carried out using a flat-ground portion of both handle parts and processing becomes easy, the aforementioned flat-ground portion can be used as a joint by a suture or adhesion means. and combination use of equipment with other members. such as a sheet. becomes easy. If this flat-ground portion has flexibility especially. a suture will become [a needle] being easy to pass easily. Moreover. it also becomes possible to bend and fold up in the aforementioned flat-ground portion.
[0022] Invention of claim 8 considers as a flat ground which formed a base of front reverse side one side with chain-stitch thread and insertion thread by organization edited by **. In a spacial configuration-like network in which the string section of the shape of a solid which builds over a connecting fibre ****** which forms a base of the other side as reticulated and forms a mesh in this reticulated base. and an other side base. and forms network eye space to an one side side was formed The difference of elevation is attached with a connecting fibre over which a base of the front reverse side was built, and the solid-like string section is characterized by a network front face making the shape of irregularity.
[0023] In the case of this spacial configuration-like network. it has a function as a sheet by flat ground. and a function as a network of a spacial configuration by solid-like **** by the side of one side. and still better. a network front face according a ** form of the solid-like string section to the string section of the shape of nothing and a solid presents the shape of the shape of irregularity. and a wave. and it becomes what was moreover stabilized superficially. therefore can be used suitable for a mat.
[0024]
[Embodiment of the Invention] Next. the operation gestalt of the spacial configuration-like network of this invention is explained based on a drawing.
[0025] Drawing 1 sketches the appearance of one example of the spacial configuration-like network (A) concerning this invention volume [on **]-composed by the synthetic-fiber line of thread which can give rigidity and elasticity moderately mainly with a heat set. and some amplification perspective diagrams of the same as the above [drawing 2] and drawing 3 have illustrated the ****** Fig. same as the above.
[0026] In drawing 1 and drawing 2 . (1) and (2) show the base of making the shape of table Ura's network. respectively. (3) shows the connecting fibre over which it was built between each ****** (11) which forms a mesh in the base (1) of the front reverse side. and (21). and (21). The string section (4) which these table Ura's ****** (11). (21). and a connecting fibre (3) build. and forms network eye space (S) by the portion is formed in the shape of [which has an opening substantially] a solid. (5) shows the pars tuberalis of the string section (4) of the shape of said solid. and (4).
[0027] And in the aforementioned spacial configuration-like network (A). it distinguishes between the height of the network thickness direction in the necessary part of the longitudinal direction (the continuation direction). and. as for the solid-like string section (4). the network front face is making the shape of irregularity over the whole region. especially -- the case of drawing 1 -- each pars tuberalis of solid-like **** (4) and (4) -- (-- a part for a part for high heights (a) and a low crevice (b) and the portion (c) of the medium height are formed in every 5) by turns. and the shape of irregularity is made.
[0028] ****** (11) of the base (1) of the aforementioned front reverse side and (2) and (21) It consists of a stitch train of 1 or two or more wales (in the case of drawing 2 , they are two wales) by the insertion thread by which horizontal swing insertion is carried out to chain-stitch thread and a chain-stitch wale. respectively. This ****** (11) and (21) are tubercular by turns for every necessary gap equivalent to ****** (11) which adjoins right and left. (21). and a mesh. make the shape of zigzag. and are following the sewing direction. thereby -- table Ura's mesh (13). and (23) -- getting it blocked -- network eye space (S) is making the polygon of a square. a rhombus or an abbreviation hexagon. etc.. etc. (15) and (25) show the pars tuberalis of ****** (21) and (21). [****** (11). (11). and]
[0029] The aforementioned spacial configuration-like network (A) is volume[on **]-composed by the double RASSHIERU machine which has the needle bed of two trains. and explains the example of the organization based on drawing 3 .
[0030] In the front side of a double RASSHIERU machine two sorts of chain-stitch reeds (L2) which **** two chain-stitch thread at a time by turns. respectively -- with and (L3) by insertion **** (L1) which **** insertion thread every two wales While composing ****** (11) of the reticulated base (1) on a side front by the stitch train over two wales. respectively. carrying out horizontal swing insertion of the insertion thread to a chain-stitch reed (L2) and (L3) the chain-stitch wale to depend. respectively By making the chain-stitch thread of a chain-stitch reed (L2) (L3) shift horizontally by two wales alternately with right and left for every necessary course equivalent to a mesh.

respectively, and carrying out stitch formation, it is tubercular by turns [****** (11) and by turns] which adjoin right and left, and the organization returned to the original wale location is repeated after that.

[0031] moreover, two sorts of chain-stitch reeds (L6) which **** two chain-stitch thread at a time by turns to a back side, respectively -- with and (L7) by insertion **** (L8) which **** insertion thread every two wales While composing ****** (21) of a base (2) which makes the shape of a network on a background by the stitch train over two wales, respectively, carrying out horizontal swing insertion of the insertion thread to the chain-stitch wale by the chain-stitch reed (L6) (L7), respectively By making chain-stitch thread shift horizontally by two wales alternately with right and left, and carrying out stitch formation in the same course location as the front side for every course equivalent to a mesh, it is tubercular by turns [****** (21) and by turns] which adjoin right and left, and the organization returned to the original wale location is repeated after that.

[0032] And (L5) it uses, moreover, two sorts of connecting fibre reeds (L4) which **** two connecting fibres (3) at a time by turns about a connecting fibre (3), respectively -- to one connecting fibre reed (L4) Thread and every two high high shrinkage-characteristics thread of heat shrink nature with low heat shrink nature are ****(ed) by turns every four wales, and it usually considers as the low thing of the high high shrinkage-characteristics thread of heat shrink nature, and heat shrink nature for which it usually **** two thread at a time by turns every four wales to this at the connecting fibre reed (L5) of another side. [L4 (3a)] -- [L5 (3a)] -- both the connecting fibre reed (L4) (L5) -- each -- usually -- the guide portion of thread -- being shown -- [L4 (3b)] and [L5 (3b)] -- a connecting fibre reed (L4) (L5) -- the guide portion of each high shrinkage-characteristics thread is shown. | and]

[0033] As shown in drawing 3 , fundamentally and by | which constitute ****** (11) of the base (1) of the front reverse side, and (2), and (21)] building the stitch train of two wales by turns, respectively, and carrying out stitch formation the chain-stitch reed (L2) (L3) described above while carrying out connection organization of both bases (1) and (2) with the connecting fibre (3) -- and (L6) (L7) the pars tuberalis (15) of ****** of the front reverse side by shift, and among (25) In the course location equivalent to the pars tuberalis in every other one And (L6) (L7) doubles with shift, a chain-stitch reed (L2) (L3) -- After making the connecting fibre of both the connecting fibre reed (L4) (L5) shift to an opposite direction horizontally by two wales mutually, In the course location which composes in it as returns to the original stitch train, and is equivalent to other pars tuberalises in every other one After repeating the organization in which cover the number course containing the course before and behind that, and both the connecting fibre reed (L4) (L5) is made to shift to an opposite direction horizontally by two wales mutually, The guide location of both the connecting fibre reed (L4) (L5), i.e., the wale location of the guide portion [L4 (3a)] of both reeds, [L4 (3b)], a guide portion [L5 (3a)], and [L5 (3b)], is replaced and composed.

[0034] Thus, solid-like **** (4) which consists of a connecting fibre (3) over which ****** (11) of the base (1) of the front reverse side and (2), (21), and its both are built by composing The portion usually built over thread as a connecting fibre (3) and the portion built over high shrinkage-characteristics thread It will consist by turns for every course which is equivalent to a sewing direction with two meshes (S). i.e., network eye space. Consequently, the pars tuberalis (5) of the string section (4) and (4) That in which thread and high shrinkage-characteristics thread are usually intermingled by the connecting fibre (3) of the portion with the thing of only thread and the thing of only high shrinkage-characteristics thread arises.

[0035] So, in order to usually contract thread hardly to high shrinkage-characteristics thread contracting greatly by widening suitably after the aforementioned organization and carrying out a heat set In the pars tuberalis (5) which the aforementioned connecting fibre usually becomes only from thread, the height of the network thickness direction becomes a part for high heights (a). Moreover, it is that from which it becomes a part for the crevice where the height of the network thickness direction is low (b), and a connecting fibre usually serves as a portion (c) of middle height further by the pars tuberalis (5) by mixture with thread and high shrinkage-characteristics thread at the pars tuberalis (5) which said connecting fibre becomes only from high shrinkage-characteristics thread. The spacial configuration-like network (A) shown in drawing 1 and drawing 2 is obtained.

[0036] By this spacial configuration-like network's (A's)'s having the difference of elevation in a network front face, and making the shape of irregularity, it is a part for a part for those heights (a), and a crevice (b), and the rigidity of the network thickness direction differs from contact pressure. Therefore, when it is used, for example for a mat, a cushioning material, etc., contact pressure differs and the finger " pressure effect can be expected. Moreover, are closed by the stitch organization by contraction of high shrinkage-characteristics thread, and structure is stable.

[0037] in addition, in the above-mentioned example, a part for a part for heights with the high height of the thickness direction (a) and the crevice where the height of the thickness direction is low (b), and the portion (c) of middle height are in every direction, although allotted by turns, respectively As shown in drawing 4 , a part for in addition, heights with the high height of the thickness direction of a pars tuberalis (5) (a), a part for a crevice (b) and the portion (c) of middle height with the low height of the thickness direction -- respectively -- a sewing direction -- the same rank -- and it arranges by turns crosswise, and it can be made the concavo-convex gestalt which a network front face presents the shape of a wave as a whole, and can also carry out.

[0038] Such a spacial configuration-like network (A) of a gestalt In for example, the course location which is equivalent to each pars tuberalis (15) of ****** of the front reverse side by the above-mentioned shift of a chain-stitch reed, and (25) about both the connecting fibre reed (L4) (L5) in ****** of drawing 3 After making the connecting fibre of both the connecting fibre reed (L4) (L5) shift to an opposite direction horizontally by two wales mutually to compensate for shift, and (L6) (L7) composes, as it returns to the original stitch train, a chain-stitch reed (L2) (L3) -- It is obtained by composing without usually replacing the wale location of the guide portion [L4 (3a)] of thread, [L5 (3a)], and the guide portion [L4 (3b)] of high shrinkage-characteristics thread and [L5] (3b). Thus, the shape of toothing on the front face of a network can be made into various concavo-convex gestalten with the thread usage of a connecting fibre (3), and the combination of ******.

[0039] By having considered solid-like **** (4) as the configuration which gave the width of face of two or more-wale two or more wales like the above-mentioned example, only comparing with the case of the string section by the stitch train of one wale, it is easy, and density of a connecting fibre (3) can also be made high and organization can make reinforcement and compressibility-proof high.

[0040] That is, although it is necessary to use thread, such as a thick monofilament which has rigidity comparatively, in order to raise the reinforcement of the solid-like string section, and compressibility-proof, in the case of thick monofilament yarn, the ** loop of thick mono-filamen thread cannot become tight easily that a ** gage must be made coarse and it is hard to compose it on organization technology either.

[0041] On the other hand, when it considers as the string section of the shape of a solid with the width of face of two or more-wale two or more wales, without making thick the thread to be used, it is the same as it, or the string section which has the reinforcement beyond it and compressibility-proof can be constituted, and a high spacial configuration-like network can be composed for compressibility-proof using

thin thread, and tightness of a ** loop is also good, and it excels also in endurance.
[0042] So, although it is also possible to make the solid-like string section into the width of face of one wale, it is desirable to give the width of face of two or more wales as mentioned above operationally. Moreover, the contact area at the time of using that it is solid-like **** with the width of face of two or more wales as a mat or a cushioning material becomes large, and this tactile feeling becomes good.
[0043] In each above-mentioned example, by being able to shift a location to a sewing direction and composing the pars tuberalis (15) in the base (1) of the front reverse side, and (2), and (25) of the front reverse side to it, it can also form so that the connecting fibre (3) of the solid-like string section (4) may incline right and left by turns and trussed structure may be made. Also in this case, from usually composing as a connecting fibre (3), using thread and high shrinkage-characteristics thread, as mentioned above, in the spacial configuration-like network which makes trussed structure, it can distinguish between that network table rear face, and can consider as the shape of irregularity. In this case, solid **** falls, ****** is regulated mutually, structure is stabilized further, and the compressibility-proof of the whole network increases.
[0044] By changing suitably the number of courses and location which can shift the location of the pars tuberalis (15) of the aforementioned front reverse side, and (25) on the front reverse side, a pars tuberalis (13) and (23) can set the gestalt as arbitration, such as making it come to an alternate location by the front reverse side, or considering as the configuration which was able to shift the location slightly on the front reverse side.
[0045] As shown in drawing 5 , the base (1) of the front reverse side in the above-mentioned spacial configuration-like network (A) and (2) at least moreover, on the other hand (in the case of drawing, it is a front **** base) So that a mesh smaller than the network eye space (S) formed of solid-like **** (4) containing the connecting fibre (3) which forms network eye space (S) may be formed [when ****** (11) which does not have a connecting fibre (3), and (21) are prepared in network eye space and it constitutes them] By usually composing, using thread and high shrinkage-characteristics thread as the connecting fibre (3) It distinguishes between the height of the network thickness direction like the above at the string section (4) of the shape of a solid of ****** (11) of the front reverse side, (21), and a connecting fibre (3), and the pars tuberalis (5) of this **** (4) and (4) (in drawing 5 , it is illustrating without attaching the difference of elevation.). A network front face can be constituted in the shape of irregularity, and can be carried out.
[0046] Drawing 6 shows one example of ****** of the network of the aforementioned gestalt. And (L(L2) 3) (L1) the chain-stitch reed and insertion **** by the side of a front, (L6) The chain-stitch reed and insertion **** (L(L4) 5) by the side of the back and (L8) by showing a connecting fibre reed and composing like this ****** (L7) The spacial configuration-like network which prepared ****** (11) which does not have a connecting fibre (3), and (21) in network eye space (S) can be obtained. And in organization of this ******, it can distinguish between the height of the network thickness direction of solid-like **** (4) with the heat set after organization like the above-mentioned example by usually arranging thread and high shrinkage-characteristics thread by turns, respectively as a connecting fibre reed (L4) and (L5) a connecting fibre (3) which ****.
[0047] In the part of the arbitration of a sewing direction [in / for the connecting fibre (3) over which the base (1) of the front reverse side and (2) are built in the spacial configuration-like network (A) of each above-mentioned example / solid-like **** (4)] This slant can build and a portion can also be made to cross the interior of solid-like **** (4), and/or in the shape of network eye (space S) abbreviation X by making it shift to at least one or more wale right and left, building aslant and composing from the wale which faces on the front reverse side.
[0048] Drawing 7 shows one example of ****** of the network of the aforementioned gestalt. A front side like the above-mentioned example by the chain-stitch reed (L2) (L3) and insertion **** (L1) A back side moreover, by the chain-stitch reed (L6) (L7) and insertion **** (L8) In the organization which composes so that the stitch train of two wales may constitute ****** (11) of a front reverse side base (1) and (2), and (21) The connecting fibre reed (L4) which **** every other is used. A connecting fibre for every (drawing is every course) number course In case it builds from either a front or the back to the other side, it is composing so that it may be made to shift to the stitch train beside a number wale (for drawing to be one wale) part and may build from the stitch train of corresponding ******.
[0049] In solid-like **** (4) according [a connecting fibre (3)] to two or more stitch trains by this the stitch train which carries out a front reverse side response -- it builds and slanting a portion (31) and inside solid **** (4) -- slanting, as it builds, a portion (32) exists by turns for every course and it is shown in drawing 8 -- it will build and a portion (32) will cross in the shape of abbreviation X within solid-like **** (4).
[0050] And by usually matching high shrinkage-characteristics thread with thread by turns for every number wale, and composing as a connecting fibre ****(ed) by the connecting fibre reed (L4) also in this case as described above, as described above, it can distinguish between the height of the thickness direction of the solid-like string section (4) by the organization ****** set.
[0051] In addition, by changing the organization of the aforementioned connecting fibre (3) suitably, it can allot so that slant may build and a portion (32) may be crossed in the shape of abbreviation X in the part of arbitration, such as a pars tuberalis (5) of the sewing direction ends in network eye space (S), or a **** order location.
[0052] this slanting spacial configuration-like network (A) that builds and has a portion (32) -- solid-like **** (4) -- falling -- etc. -- it can regulate, the firmness of solid-like **** (4) will become still better, the whole network is covered, and abbreviation homogeneity and good compressibility-proof can be held.
[0053] furthermore, in the spacial configuration-like network (A) of each above-mentioned example, like the spacial configuration-like network (A) shown in drawing 9 and drawing 10 In the portion of the arbitration which contains the handle part of the both-sides edge of ******** in the organization edited by ** at least, the base (1) of the front reverse side and (2) can be composed of the Taira ground weave, and the flat-ground portion (a1) which was mainly intermittent succeeding the sewing direction can be formed. (A1) shows the network section which distinguished between solid-like **** (4).
[0054] Also in this network, in the network section (A1), it can distinguish between the height of the network thickness direction of solid-like **** (4) by usually composing thread and high shrinkage-characteristics thread as a connecting fibre (3) like the example which allotted by turns and was described above, respectively.
[0055] In addition, although the aforementioned flat-ground portion (a1) is also good to form only in both handle parts, as for an activity top, it is desirable to form in 1 of the medium besides both handle parts or two or more places.
[0056] When in the case of this spacial configuration-like network (A) a pincette is carried out using the flat-ground portion (a1) of a handle part, and it can hold in the set-up condition in the case of heat set processing after organization and it combines with other members, such as a web material, a flat-ground portion (a1) can be used as a joint by a suture or adhesives, or the double faced adhesive tape, and combination with other members, such as a sheet, becomes easy. Furthermore, a flat-ground portion (a1) can be used as the anchoring

section of instruments, such as connecting fitting.
[0057] Moreover, the thread which has flexibility comparatively, such as multifilament thread, natural fiber thread, etc. of a synthetic fiber, can be used for some of configuration thread of the base (1) of the front reverse side in the aforementioned flat-ground portion (a1), and (2), and/or connecting fibres [at least] (3).
[0058] since [in this case,] a flat-ground portion (a1) will have flexibility, tends to make it flatten and can make thickness of this section small -- a needle -- a passage -- easy -- a suture becomes easy. Moreover, it also becomes possible easily to bend and fold up in the aforementioned flat-ground portion (a1). Since it is easy to contract to a sewing direction also in a handle part in case a spacial configuration-like network will be extended that it is easy to extend to ******** after organization, if especially the handle part is the flat ground composed with the thread of flexible fiber, it can cross throughout a network, and network eye space can be extended and set to a predetermined configuration with an equal abbreviation.
[0059] As configuration thread of said flat-ground portion (a1), one or more sorts, such as high tension thread, such as heat welding **** and carbon thread, antibacterial thread, high shrinkage-characteristics thread, elastic yarn, and water retention thread, can also be used further if needed.
[0060] In the spacial configuration-like network (A) which forms a flat-ground portion (a1) still as mentioned above, like drawing 11 , it can compose in the organization of a flat-ground portion (a1) which does not have a connecting fibre (3) for a crosswise center section at least, and can form in the two-layer structure by the base (1) of the front reverse side, and (2). In this case, it becomes possible to be able to make small thickness of a flat-ground portion (a1), and to insert the long bodies (graphic display abbreviation), such as a rope metallurgy group wire rod or a hollow pipe and a perforated pipe, cotton and urethane foam, exotherm, an air conditioning pipe, and an antimicrobial agent spraying pipe, in the building envelope between a front reverse side base (1) and (2).
[0061] Drawing 12 shows the example of further others of this invention. The network (A) of this example by organization edited by ** The base of front reverse side one side, For example, it considers as the flat ground which formed the base (2) on a background with chain-stitch thread and insertion thread. The string section (4) of the shape of a solid which builds over a connecting fibre (3) ****** (11) of 1 which makes the base (1) of the other side reticulated, forms it, and forms a mesh in this reticulated base (1), or two or more wales, and an other side base (2), and forms network eye space (S) to an one side side is formed. And by the string section (4) of the shape of an above solid usually matching high shrinkage-characteristics thread with thread by turns for the connecting fibre (3) over which the base (1) of the front reverse side and (2) were built, using it, and composing, the difference of elevation is attached using the contraction after organization, and the network front face is making the shape of irregularity.
[0062] The function as a sheet according to the flat ground the case of this spacial configuration-like network (A). It has a function as a network of the spacial configuration by solid-like **** by the side of one side (4). Still better, the network front face according the ** form of solid-like **** to the string section (4) of the shape of nothing and a solid will present the shape of the shape of irregularity, and a wave, and it will become what was moreover stabilized superficially, therefore can be used suitable for a mat etc.
[0063] In addition, in the spacial configuration-like network of each above-mentioned example, although the graphic display is omitted, it can compose so that it may have the portion by which it is not selectively built over a connecting fibre between front reverse side bases for every fixed gap of a sewing direction. Thus, by composing, the space which continues in the direction of an abbreviation right angle to a sewing direction can be formed, it can let the pipe for aeration, and exotherm pass into this portion, and a suitable spacial configuration-like network can be further obtained on an activity.
[0064] Moreover, although each above-mentioned example usually showed the case where it distinguished between the height of solid-like **** of the network thickness direction, by the heat shrink nature by the heat set using two sorts of thread of thread and high shrinkage characteristics as a connecting fibre (3) Using three or more sorts of thread with which heat shrink nature differs as a connecting fibre in addition, by using elasticity thread for some connecting fibres, or giving change to the tension at the time of organization The various operations which can distinguish between the height of the thickness direction by other physical means or organization organizations are possible for distinguishing between the aforementioned height etc.
[0065] In the above-mentioned spacial configuration-like network (A), although the line of thread which constitutes the base (1) of the front reverse side and (2) changes also with uses and it is not limited especially, synthetic fiber yarn is usually used and various kinds of multifilament thread and monofilament yarn of a synthetic fiber of nylon thread, carbon fiber thread, elastic yarn, and others are used suitably. Of course, the thread of a natural fiber can also be used. Moreover, although it is suitably chosen from synthetic fiber yarn or natural fiber thread in consideration of elasticity, reinforcement, heat shrink nature, etc. similarly and monofilament yarn is mainly suitably used from the point of spacial configuration maintenance, it is not said thing limited to this, so that it may be suitable for connecting said table Ura's base (1), and (2), and supporting in the shape of a solid as a connecting fibre (3). It is used with single yarn, and also a book can subtract more than one, and each of these can be arranged, and can be used as thread.
[0066] These lines of thread can give rigidity and compressibility-proof moderately by the heat set or synthetic-resin processing after organization, or other processings. Moreover, the pressure resistance and elastic force of the thickness direction increase, so that the number of the connecting fibre which connects the base of the front reverse side increases and density becomes high. Moreover, in the case of thick thread, for homogeneous raw materials, such as nylon, the waist becomes strong.
[0067] The size and raw material of these lines of thread are determined in consideration of the reinforcement demanded by the use, tension, elasticity, etc. for example, the case where it composes of 14 to 9 gage (a needle number / inch) with a double RASSHIERU machine as a cushioning material, mat material, or a charge of industrial lumber -- a reticulated base -- 100-2000 deniers -- desirable -- 200-600-denier thread -- moreover, as a connecting fibre, 100-3000 deniers of 100-1500-denier thread are used suitably preferably.
[0068] However, it carries out to a gage thin to compose economically, for example, 22 to 18 gage, and thread thinner than the above can be used, and it can be made 4.5 to 3 gage, thread still thicker than the above can be used and reinforcement can also be raised to raise physical reinforcement.
[0069] Furthermore, the knitting machine gage of the double RASSHIERU machine which composes ****** (11) of the base (1) of the front reverse side and (2) and (21), i.e., **** of order, a needle, and the gage (a needle number / 1 inch) of a guide can be set as specification (for example, before 9 gage, after 18 gage) different more than twice [at least], and can be composed of the front reverse side using the thread with which sizes differ. Thereby, of the ** gage of front reverse side identitas, it can compose by using for the way of a coarse gage the reinforcement which cannot be composed, hardness, and thread with elasticity, for example, thick monofilament yarn, and the reinforcement of a base can be further raised with it.
[0070] Moreover, by using elastic yarn for all or some of chain-stitch thread which constitutes the base (1) of the above-mentioned front

reverse side, and (2), or insertion thread, it is also possible to consider as the network with elasticity of a hollow spacial configuration. In this case, the fit nature and the elasticity which are not obtained are obtained in the network which is not using elastic yarn. Moreover, placing (a course/inch) can be changed selectively, or it can consider as the spacial configuration-like network which differed in placing on the front reverse side.

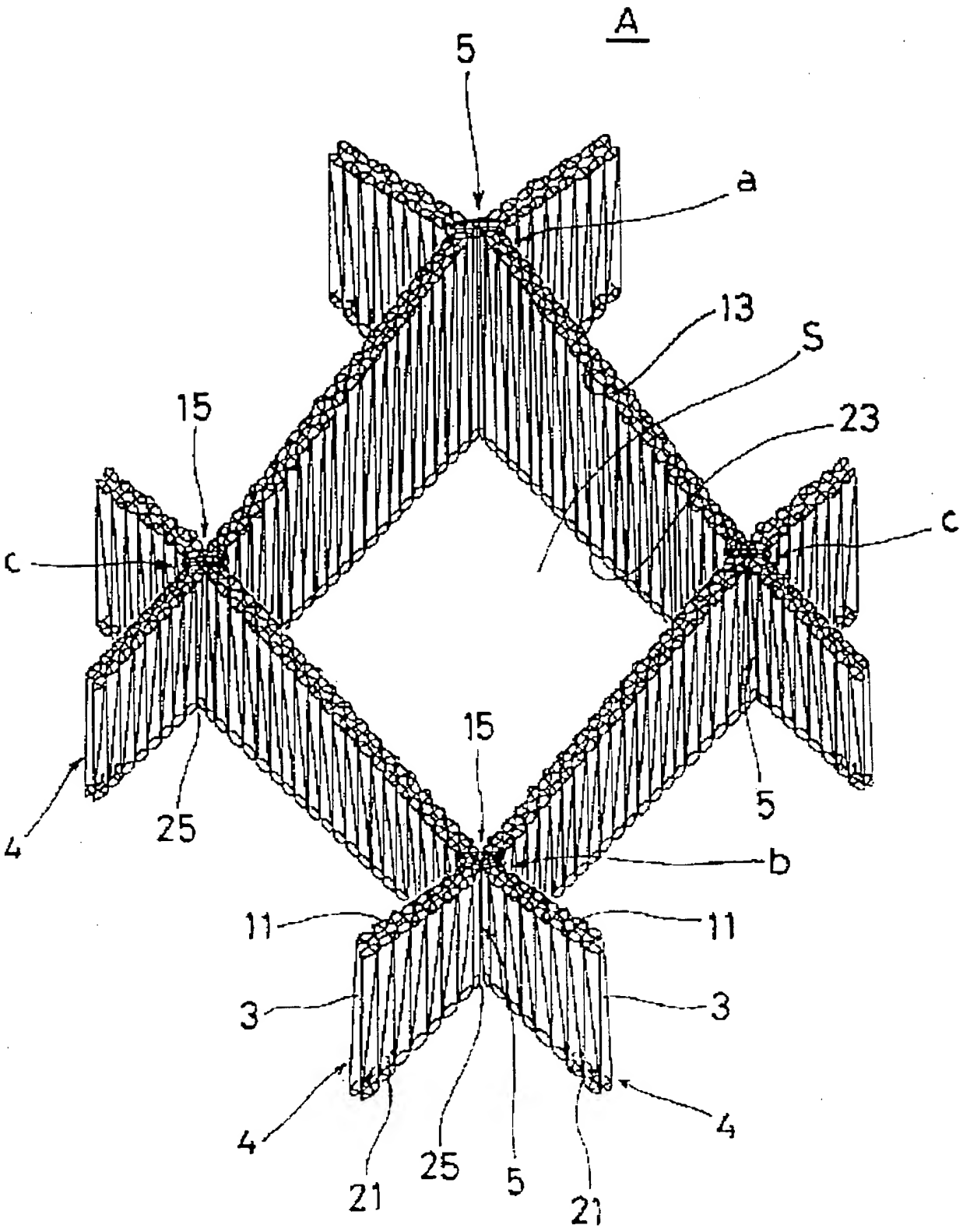
[0071] Moreover, it is also possible to change the thread type of elastic yarn, natural rubber silk, and synthetic fiber yarn, and to consider as a spacial configuration with a ** form, elasticity, or a feeling of software for every number wale.

[0072] The thickness of the spacial configuration-like network (A) of this invention, and network eye space (S) and the magnitude of solid **** change with the uses etc., in 3-60mm and network eye space (S), the thickness of a network puts the activity top as a network for vegetation, and although the thing of the range of 0.5-200mm is generally used, of course, operation out of said size is also possible for 10-500mm of delivery, and the width of face of ******.

[0073]

[Effect of the Invention] Since the difference of elevation is attached with the connecting fibre with which the base of the front reverse side was built over solid-like **** to which this invention by the above-mentioned structure forms the network eye space in a spacial configuration-like network and the network front face is making the shape of irregularity, When the contact pressure of the thickness direction becomes high in a part for heights, therefore this is used for a mat, a carpet, etc., a good feeling of contact is not only obtained, but it can demonstrate the finger pressure effect and the jar stimulus effect. It can be suitably used also as the cushioning material for the base besides a mat or a carpet, the cushioning material the object for hot carpets, and for ******, a sport, a spacer for garments, etc.

[Translation done.]


A
5
a
13
S
15
23
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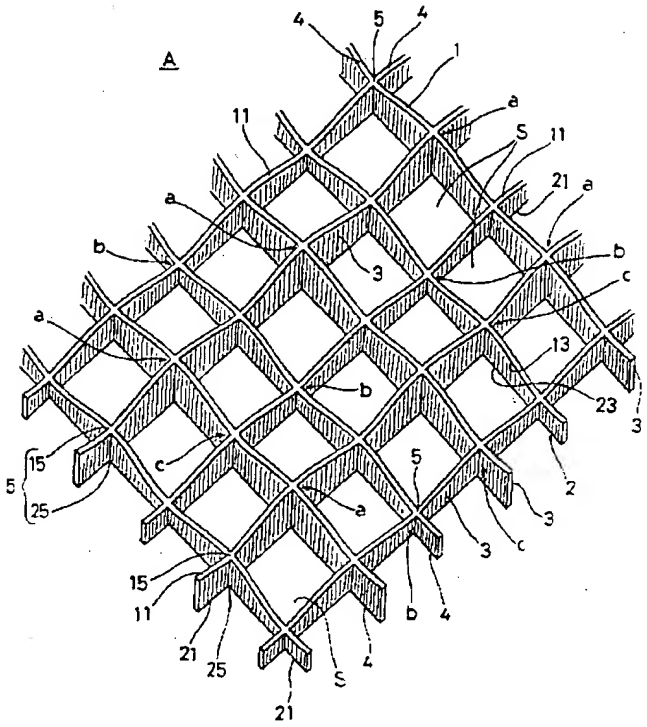
Drawing selection drawing 1



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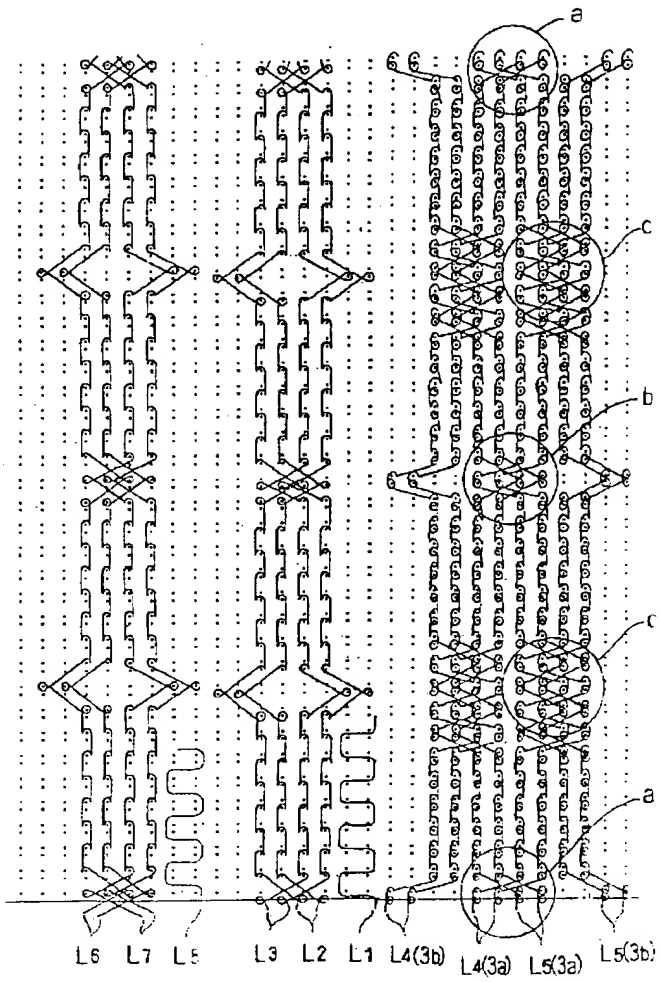
Drawing selection drawing 3



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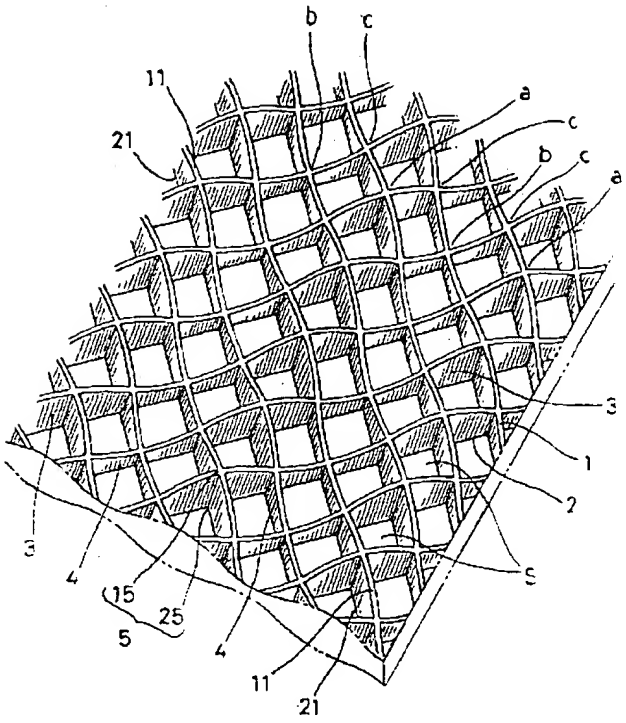
Drawing selection drawing 4



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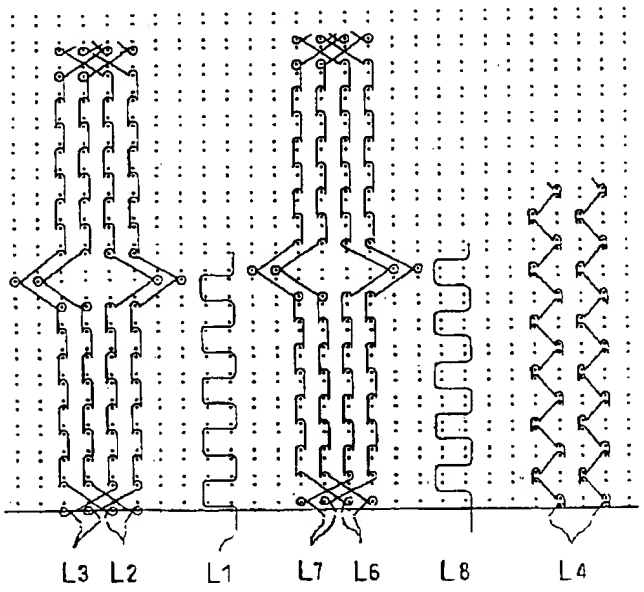
Drawing selection drawing 7



[Translation done.]